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EXAMINER

LEO, LEONARD R

ART UNIT PAPER NUMBER

3743

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DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/705,367

Applicant(s)

DOLL, WADE J.

Examiner

Leonard R. Leo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2002 and 21 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-22, 43-45, 47 and 48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10-13, 15, 17-22, 43, 44, 47 and 48 is/are rejected.
- 7) ☒ Claim(s) 9, 14, 16 and 45 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Election/Restrictions*

Applicant's election of the invention of Group I in Paper No. 13 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 29-31, 35-42 and 46 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. However, claims 29-31, 35-42 and 46 are cancelled.

Claims 1-4, 6-22, 43-45 and 47-48 are pending.

### *Claim Objections*

Claims 1 is objected to because of the following informalities:

Regarding claim 1, the comma after "heat exchanger" should be removed, and the recitation of "of the of the" in line 7 requires correction.

Regarding claims 2-3 and 6-17, the claims should recite a "heat exchanger *assembly*."

Regarding claim 2, the claim does not end with a period.

Regarding claim 6, the claim does not end with a period.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Opitz et al (column 3, lines 3-13). The recitation of "configured to direct fluid entering the chamber to impinge against the second surface of the plate" is not considered to be a positive limitation and is functional. See MPEP 2114.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 10-12, 15 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opitz et al in view of Randell.

Opitz et al discloses all the claimed limitations except two concentric arrays of fins.

Randell discloses a heat exchanger (Figures 4-5) comprising a heat conducting surface 14 (i.e. top) and a plurality of radial fin arrays 9-13 arranged in a spiral pattern for the purpose of improving heat exchange efficiency.

Since Opitz et al and Randell are both from the same field of endeavor and/or analogous art, the purpose disclosed by Randell would have been recognized in the pertinent art of Opitz et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Opitz et al a plurality of radial fin arrays arranged in a spiral pattern for the purpose of improving heat exchange efficiency as recognized by Randell.

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Regarding claims 10-12 and 47, Randell (Figure 5) discloses inner fin arrays (9-10) spaced from outer fin array (12).

Regarding claim 48, the fins of Randell (Figure 4) extends from the overhead wall 14 (i.e. top) to heat conducting plate 14 (i.e. bottom).

Claims 1-4, 7-8, 10-13, 17-18, 20-21, 43-44 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little in view of Randell.

Little discloses all the claimed limitations except radial fins forming radial channels.

Randell discloses a heat exchanger (Figures 4-5) comprising a heat conducting surface 14 (i.e. top) and a plurality of radial fin arrays 9-13 arranged in a spiral pattern for the purpose of minimizing pressure drop.

Since Little and Randell are both from the same field of endeavor and/or analogous art, the purpose disclosed by Randell would have been recognized in the pertinent art of Little.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Little radial fin arrays arranged in a spiral pattern for the purpose of minimizing pressure drop as recognized by Randell.

Regarding claims 10-12 and 47, Randell (Figure 5) discloses inner fin arrays (9-10) spaced from outer fin array (12).

Regarding claims 7, 13 and 43-44, the radial channels 38 of Little do not extend to the annular channel 40. Therefore, in the modification with Randell, the radial fins defining the radial channels would extend to the annular channel 40 of Little.

Regarding claim 48, the fins of Randell (Figure 4) extends from the overhead wall 14 (i.e. top) to heat conducting plate 14 (i.e. bottom).

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Claims 1-4, 6-8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little in view of Turner.

The device of Little lacks radial fins forming radial channels.

Turner discloses a heat exchanger comprising a chamber defined by overhead wall 10 having a central inlet 15 and unlabelled peripheral outlet; a fin plate 20 having a plurality of curved fins 22-27 arranged in a radial spiral pattern for the purpose of minimizing pressure drop.

Since Little and Turner are both from the same field of endeavor and/or analogous art, the purpose disclosed by Turner would have been recognized in the pertinent art of Little.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Little curved fins arranged in a radial spiral pattern for the purpose of minimizing pressure drop as recognized by Turner.

Regarding claim 7, the radial channels 38 of Little do not extend to the annular channel 40. Therefore, in the modification with Randell, the radial fins defining the radial channels would extend to the annular channel 40 of Little.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Opitz et al in view of Randell as applied to claims 2-3, 10-12, 15 and 47-48 above, and further in view of Turner, as applied to claims 1-4, 6-8 and 17 above.

Claims 6, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little in view of Randell as applied to claims 1-4, 7-8, 10-13, 17-18, 20-21, 43-44 and 47-48 above, and further in view of Turner, as applied to claims 1-4, 6-8 and 17 above.

Regarding claim 22, Turner discloses inlet and outlet threaded fittings 13 and 14, respectively.

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*Allowable Subject Matter*

Claims 9, 14, 16 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Response to Arguments*

The drawings change noted in the amendment filed November 13, 2002 is missing.

The anticipatory rejection of claims 2-3 and 6-8 in view of Opitz are withdrawn.

The obviousness rejection in view of Kodama et al is withdrawn.

Regarding applicant's remarks with respect to Little, the plate 24 of Little is "heat conductive." Applicant's statement that "Little fails to teach a heat conducting plate" is mistaken. The Examiner agrees Little discloses "the plate 24 of glass or similar materials of low thermal conductivity." However, low thermal conductivity does not mean no heat conductivity.

Applicant's remarks with respect to Little and Turner are not persuasive. Little discloses radial channels 38 to facilitate even distribution of the cooling medium through the circular chamber. As admitted by applicant, Turner also seeks to maintain uniform flow distribution of coolant. One of ordinary skill in the art would recognize this advantageous modification, since Little requires a low thermal expansion material. Uneven coolant distribution in Little would increase distortion. Thus, the modification taught by Turner would be pertinent in the device of Little.

*Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry of a general nature, relating to the status of this application or clerical nature (i.e. missing or incomplete references, missing or incomplete Office actions or forms) should be directed to the Technology Center 3700 Customer Service whose telephone number is (703) 306-5648.

Any inquiry concerning this Office action should be directed to Leonard R. Leo whose telephone number is (703) 308-2611.



LEONARD R. LEO  
PRIMARY EXAMINER  
ART UNIT 3743

May 4, 2003